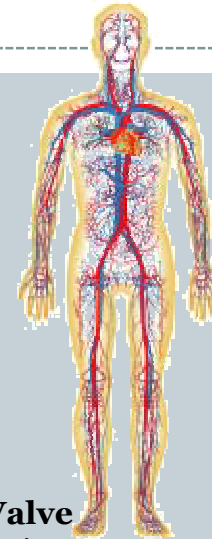


CIRCULATION



HEART STRUCTURE



Superior (Anterior) Vena Cava

Large vein that brings oxygen-poor blood from the upper part of the body to the right atrium

Aorta

Brings oxygen-rich blood from the left ventricle to the rest of the body

Pulmonary Veins

Bring oxygen-rich blood from each of the lungs to the left atrium

Pulmonary Arteries

Bring oxygen-poor blood to the lungs

Semilunar Valve

Prevents blood from flowing back into the right ventricle after it has entered the pulmonary artery

Left Atrium

Aortic (semilunar) Valve

Prevents blood from flowing back into the left ventricle after it has entered the aorta

Right Atrium

Tricuspid (AV) Valve

Prevents blood from flowing back into the right atrium after it has entered the right ventricle

AV Valve

Prevents blood from flowing back into the left atrium after it has entered the left ventricle

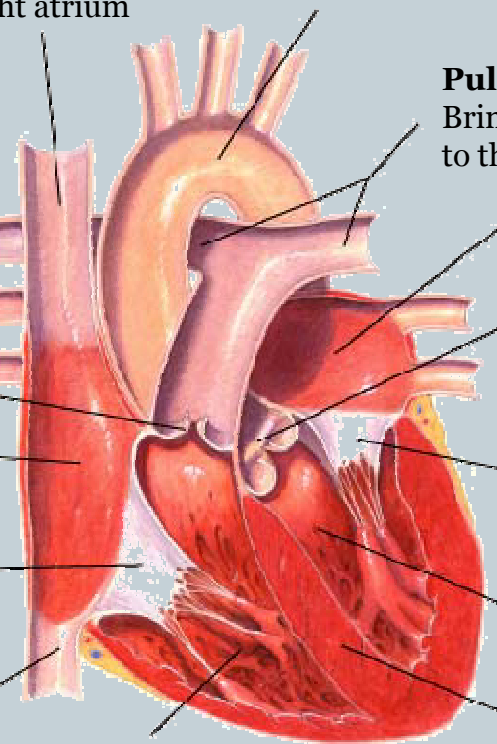
Inferior (Posterior) Vena Cava

Vein that brings oxygen-poor blood from the lower part of the body to the right atrium

Right Ventricle

Left Ventricle

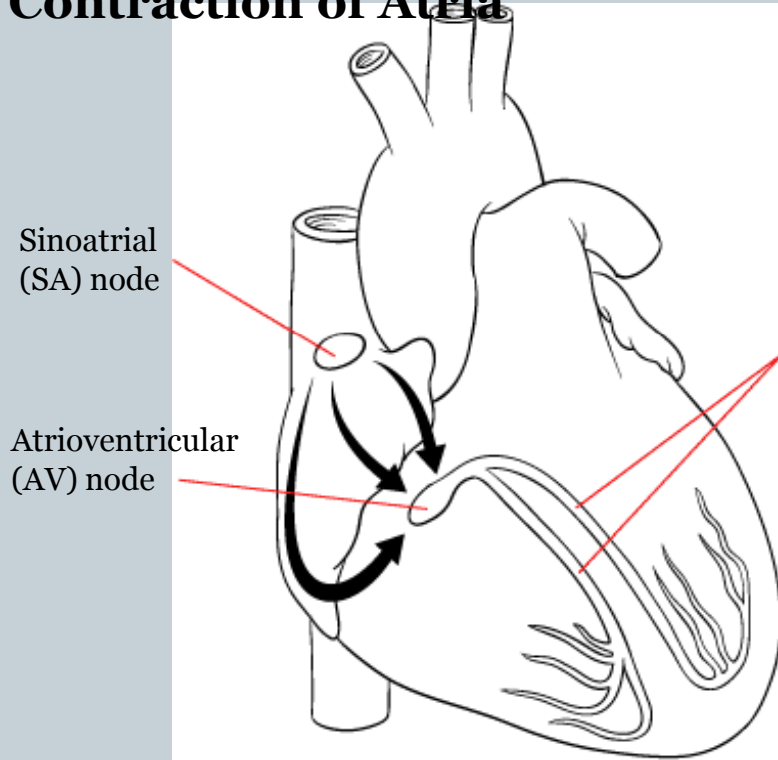
Septum



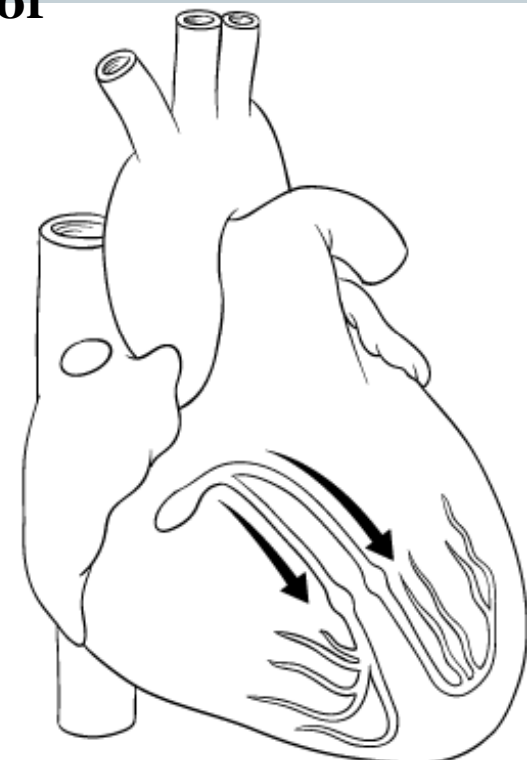
Location of SA & AV nodes



Contraction of Atria



Contraction of Ventricles



Initiation of Heartbeat



- SA node (also called the pacemaker) stimulates the atria to contract. At the same time it sends a message to the AV node
- AV node sends an impulse through the Purkinje fibres to the ventricles stimulating ventricular contraction
- Regular heartbeat is every 0.85 sec or 72 beats/min

Autonomic Control of Heart Rate



- Heart rate is controlled by the medulla oblongata of the brain.
- This is called ‘autonomic’ because it is not under conscious control
- When blood pressure is too low the medulla oblongata sends a nerve impulse to the SA node to increase heart rate, if blood pressure is too high the medulla oblongata directs the SA node to decrease heart rate.

Systole / Diastole



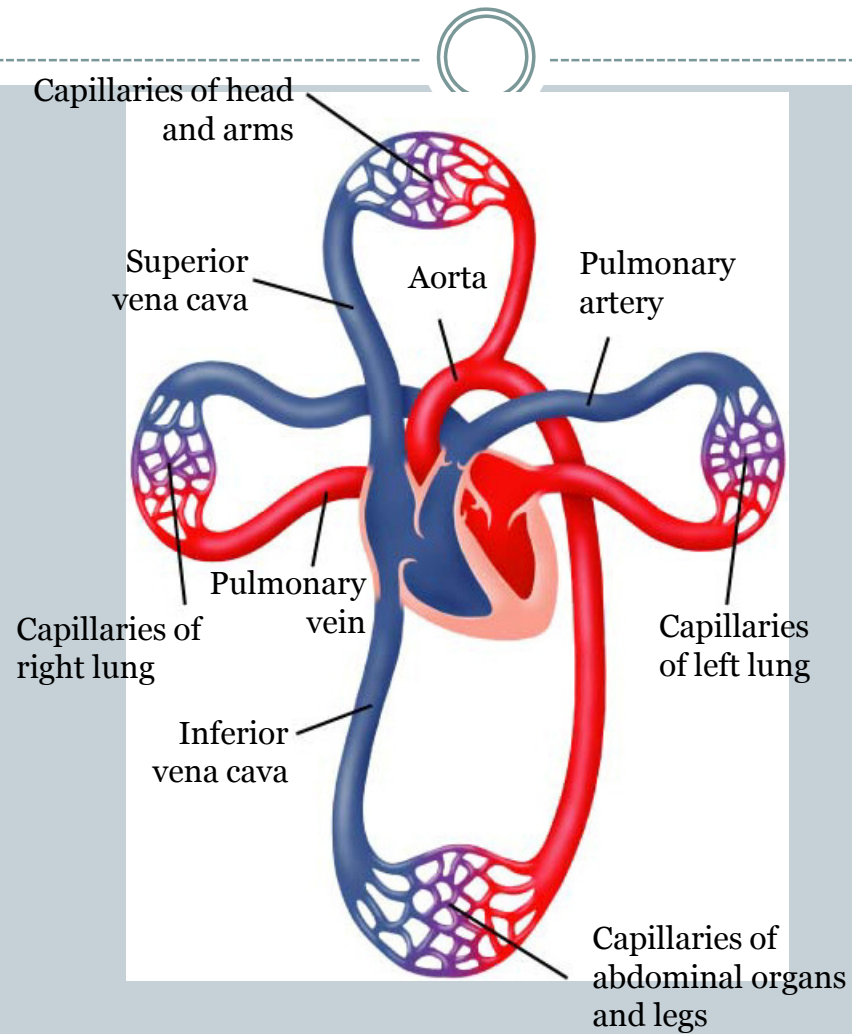
- Normal blood pressure is 120/80
- 120 is systolic pressure (ventricles contracting)
- 80 is diastolic pressure (ventricles not contracting which includes atrial contraction & ventricular relaxation & recovery)

Try This

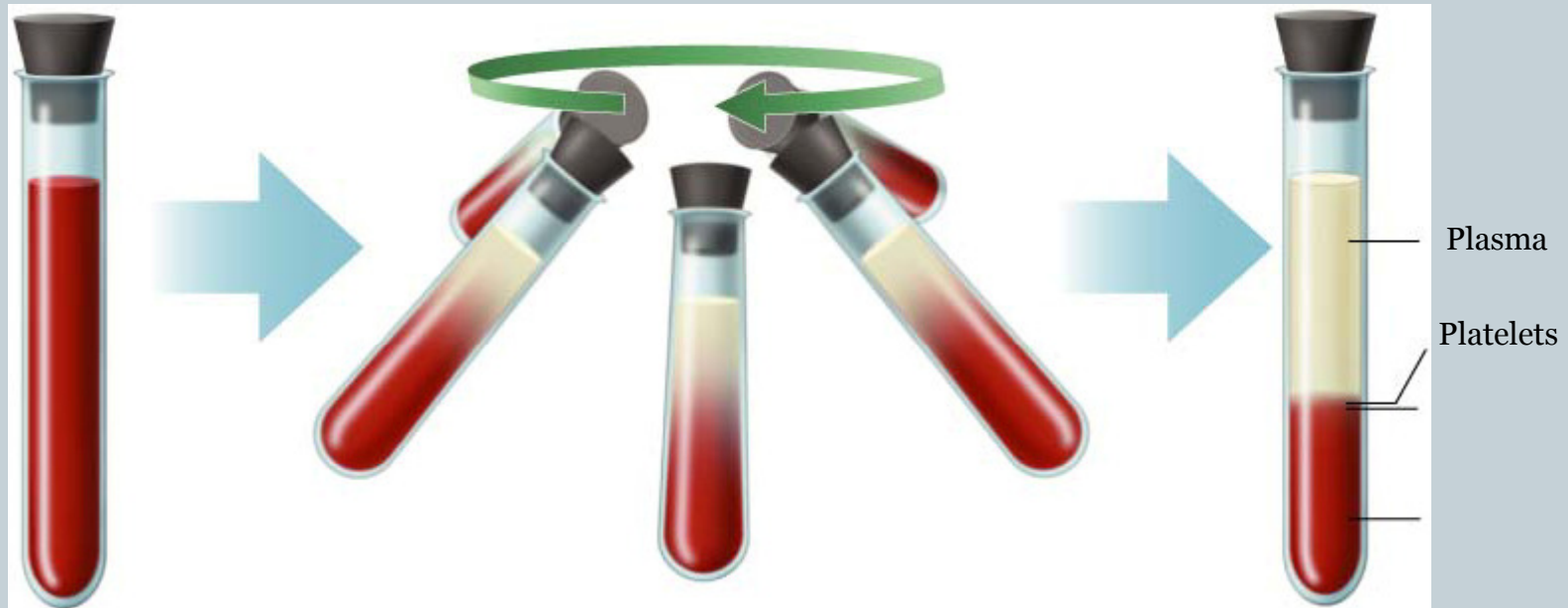


- 1. Choose the longest vein you can see on the inner side of your wrist. Starting as close to your wrist as possible, press your thumb on the vein and slide it along the vein up your arm. Did the length of the vein remain blue?
- 2. Repeat this process, but in the opposite direction, moving your thumb along the vein from the far end to the end closest to your wrist. Did the length of the vein remain blue?
- 3. In which direction is your blood flowing in this vein? How can you tell? Can you tell where a valve is located? Explain your answer.

Circulatory System



Components of Blood

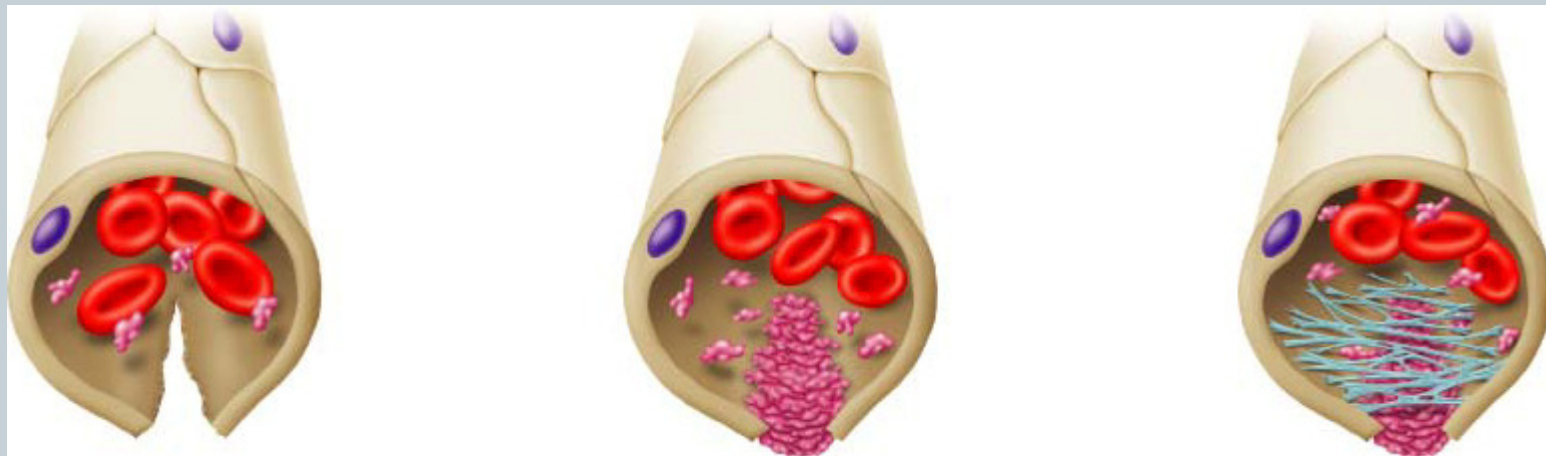


Whole Blood Sample

Sample Placed in Centrifuge

**Blood Sample That
Has Been
Centrifuged**

Blood Clotting



Break in Capillary Wall

Blood vessels injured.

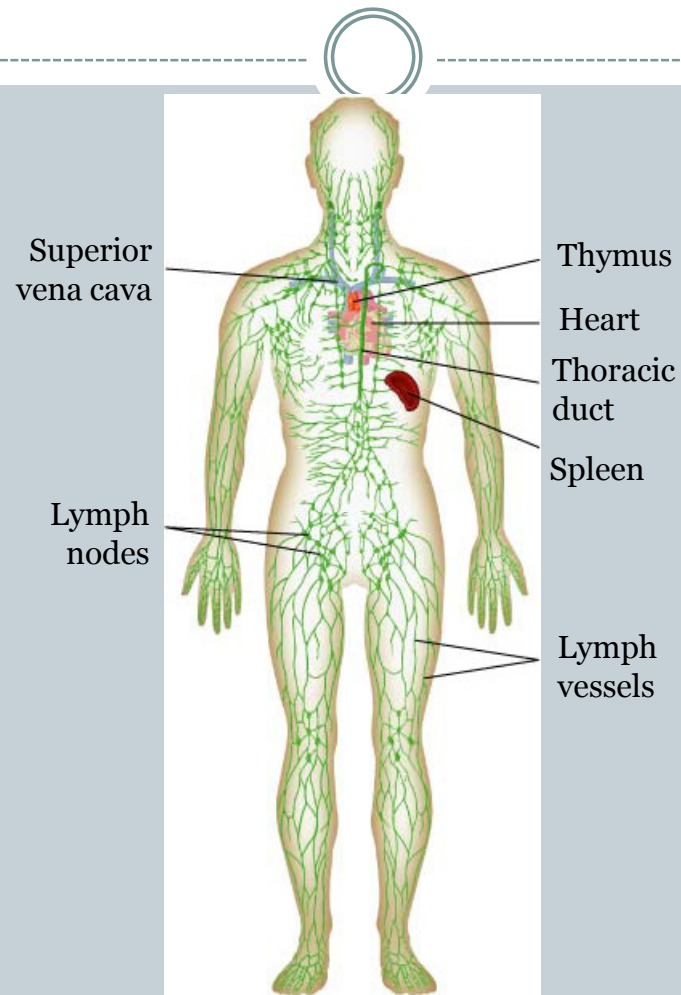
Clumping of Platelets

Platelets clump at the site and release thromboplastin. Thromboplastin converts prothrombin into thrombin..

Clot Forms

Thrombin converts fibrinogen into fibrin, which causes a clot. The clot prevents further loss of blood..

Lymphatic System



Blood Types & Donors



Blood Type of Donor	Blood Type of Recipient			
	A	B	AB	O
A	✓	X	✓	X
B	X	✓	✓	X
AB	X	X	✓	X
O	✓	✓	✓	✓

X = Unsuccessful transfusion ✓ =

Types of Vessels



Artery

Vein

